



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

MEMORANDUM

September 26, 1997

SUBJECT: Statutory Five-Year Review Report
Lewisburg Dump Superfund Site
Lewisburg, Tennessee

FROM: Robert Jourdan, Chief *Jan B Rogers / for*
North Superfund Site Management Branch

THRU: Jewell Harper, Associate Director *JH*
Waste Management Division

TO: Richard D. Green, Deputy Director *Jon D. Johnston, acting*
Waste Management Division

The subject report has been prepared in accordance With the May 23, 1991 Office of Solid Waste and Emergency Response Directive 9355.7-02. The directive calls for a statutory review of a site every five years after a Remedial Action to evaluate the remedy, where hazardous substances remain above levels that preclude unlimited use and unrestricted exposure upon remedy completion.

Remedial Action was conducted at the Lewisburg Dump site by the Potentially Responsible Parties between 1992 and 1993 under EPA oversight. Primarily, the landfill was stabilized by removing all above ground waste and debris from the site, installing an approved landfill cap, and landscaping appropriately. Site inspection, maintenance and monitoring activities are conducted periodically to ascertain that the site remains stable. Reports of these activities indicate that the Remedial Action was successfully implemented and that the site no longer constitutes a threat to human health or the environment. The site was deleted from the National Priorities List on February 1, 1996.

The attached report summarizes EPA's activities at the site, documents current conditions, and states why the site is believed to remain protective of human health and the environment. The next five-year review should be completed by September 30, 2002.

Approved: *Jon D. Johnston*
Richard D. Green,
Acting Director
Waste Management Division
EPA, Region IV

Date: 9-26-97

**FIVE-YEAR REVIEW
LEWISBURG DUMP SUPERFUND SITE
LEWISBURG, TENNESSEE**

I. BACKGROUND

A. Introduction

This initial five-year review for the Lewisburg Dump site is being performed in accordance with the requirements of OSWER Directive 9355.7-02 (Structure and Component of Five-Year Reviews, May 23, 1991). The Directive requires that statutory reviews be conducted no less often than every five years after implementation of a Remedial Action to evaluate remedy effectiveness at a site where hazardous substances remain above levels that do not allow unlimited use and unrestricted exposure.

B. Site Location and History

The site is a twenty-acre tract of farmland located less than one mile north of Lewisburg, Tennessee, and approximately forty miles southeast of Nashville, Tennessee. It contains an abandoned six-acre limestone quarry and a pond. There are ten homes with approximately thirty residents in the vicinity of the site. The City of Lewisburg owned and operated the dump which utilized approximately four acres at the western portion of the quarry for landfill operations from the late 1950s to 1979. The landfill was open to residential and industrial dumpers and was used by waste haulers from several surrounding communities.

In early 1970s, the City of Lewisburg conducted an evaluation of the facility and determined that the capacity of the landfill was nearly exhausted. Based on the evaluation, the City submitted a proposal for future use of the facility to the Tennessee Department of Public Health (TDPH), including an interim maintenance plan, a proposal for an on-site incinerator, and a schedule for the landfill closure. In 1973, TDPH conducted a study of the facility and concluded that the quarry was unfit for a sanitary landfill. The City began landfill closure in 1977 by applying dirt over the waste and completed the work in 1979.

EPA initially inspected and assessed the conditions of the site in 1982. Among the wastes observed during the inspection were adhesives, paint stripper, empty pails coated with yellow lacquer, metal cuttings, sawdust, pencil cores, cosmetic powders and shoe linings. Results of the assessment indicated the presence of organic and inorganic compounds including lead, toluene, PCB, chlordane, and phenol. After evaluating site inspection data and the conditions of the landfill, EPA added Lewisburg Dump to the NPL in December 1982.

In 1985, EPA contacted a group of companies, agencies, and individuals who were identified as potentially responsible for the wastes in the landfill to address site problems. In response, the City of Lewisburg and other potentially responsible parties (PRPs) formed the Lewisburg Environmental Response Committee (LERC) to conduct a Remedial Investigation/Feasibility Study (RI/FS) on the site. The study was conducted under the terms of an Administrative Order on Consent which the PRPs entered into with EPA.

The RI/FS, which was completed in 1990, confirmed the presence of contaminants at the site. Organic and inorganic compounds were detected in the landfill soil, shallow aquifers beneath the site, and in the abandoned quarry pond.

The most prevalent organic contaminants at the site were bis(2-ethylhexyl) phthalate, (DEHP), methylene chloride, xylene, ethylbenzene, 4-methyl-2-pentanone, 2-butanone, carbon disulfide, and toluene. The most common inorganic contaminants were copper, chromium, aluminum, arsenic, iron, lead, manganese, mercury, barium, and zinc. Of these contaminants, only DEHP and copper were detected at levels of significant concern. No contaminants were detected at appreciable concentrations beyond the site boundary.

Results of the RI/FS indicated that, although contaminant concentrations were generally insignificant, the wide variety of the compounds was of concern. Other concerns noted were that the compounds had the potential to become exposed due to landfill cover deterioration, the open access to the site and possible disturbance of landfill wastes. In addition, there was potential for increased groundwater contamination and leachate generation if site conditions were not improved.

Special studies, including well surveys and dye trace analyses were conducted in the area of the site to evaluate groundwater conditions since most residences had water wells. The well survey identified 123 households within a 2-mile radius of the site with a minimum of one well on each property. Approximately 70 of these households were utilizing groundwater from wells for domestic or livestock purposes. However, most residences near the site were connected to the municipal water supply. No industrial or municipal wells were found in the survey area. The dye trace studies did not indicate an immediate effect of the site on the domestic wells.

In order to alleviate potential adverse effects of the site on human health and the environment, the RI/FS evaluated several possible remedial measures. Based on the results, EPA issued a Record of Decision (ROD) in September 1990, which described the remedy selected for the site. The major components of the selected remedy were: 1) removal and disposal of all site surface debris, 2) removal and disposal of all debris in the quarry pond, 3) replacement of plastic test-pit caps with landfill cap material, 4) landfill cap regrading, re-seeding and maintenance, 5) implementation of institutional controls, and 6) long-term monitoring and analysis.

Shortly after the ROD was issued, EPA negotiated with the PRPs to implement and fund the selected remedy. The PRPs cooperated and signed a Consent Decree in 1991 to perform the work. Contractors to the PRPs began remedial activities in September 1992, and completed the work in September 1993. The Remedial Action Report submitted by the PRPs indicated that 382 cubic yards of soil/ debris, 172 tires, 50 empty drums and 2 drums containing lead paint and sludge were removed from the site. These were disposed of at properly permitted facilities. In August 1993, the City of Lewisburg recorded the land use restriction for the site with Marshall County as required by the Consent Decree. EPA and TDEC performed a final site work inspection in September 1993, and determined that the Remedial Action (RA) had been successfully executed. The Close Out Report for the site was issued, also in September 1993, to describe the current conditions, quality assurance and control during the remedial construction, and technical criteria for satisfying the completion requirements.

Section 300.425(e) of the National Contingency Plan (NCP) indicates that sites may be deleted from the National Priorities List (NPL) when no further Superfund response is warranted. Accordingly, the Lewisburg Dump Site was deleted from the NPL effective February 1, 1996, after EPA and the State determined that all appropriate response actions for the site had been completed by the PRPs.

Periodic site inspection, maintenance and groundwater monitoring activities which began immediately after the RA are being conducted by the PRPs. The State currently provides PRP oversight. Reports of the activities are made available for EPA review.

Six sampling points located strategically, based on dye trace studies, are used to monitor the groundwater at the site. These include a spring, three private wells and two dedicated monitoring wells. To date, more than 50 groundwater samples have been taken from the site since 1994. Analytical results of the samples are shown in the attached tables.

The purpose of the sampling activities is to evaluate the effectiveness of the RA which was designed and implemented primarily to prevent deterioration of the groundwater by removing sources of additional contamination from the site, and containing the landfill waste with improved cover. In order to assess the effectiveness of the RA, the contaminants of concern in the groundwater were reviewed. The contaminants with their concentrations before and after the RA are displayed in the following table. A review of the data shows that relatively high DEHP readings were obtained from certain water samples taken after the RA as compared to the readings for the samples collected before the RA. No other contaminant was detected at a significantly higher concentration after the RA than the concentration before the RA.

A further evaluation of the post-RA sampling results indicates that out of 52 groundwater samples analyzed for DEHP, only 9 contained the compound at higher concentration than the 12 ppb obtained from the pre-RA sample. The high readings constitute a low proportion of data size and are considered anomalous. The readings appear to reflect extraneous DEHP, probably from vinyl gloves, well casing, or other plastic products which are used frequently in the process of groundwater sampling. DEHP is a common plasticizer for these products.

CONTAMINANTS OF CONCERN	CONCENTRATION BEFORE RA, PPB	CONCENTRATION AFTER RA, PPB
Bis(2-ethylhexyl) phthalate (DEHP)	12	6-176
Aluminum	43-15, 900	131-11,200
Barium	4-698	24-177
Copper	12-120	13-164
Iron	45-25,800	168-5,840
Manganese	3-745	16-673

The table above is a list of the contaminants of concern identified as part of the RI/FS for the site. Other chemical compounds were detected during the sampling and analyses conducted at the site after RA. These other compounds are shown below with their respective ranges of concentration versus the groundwater criteria or threshold established for them in the ROD.

COMPOUND	CONCENTRATION, PPB	THRESHOLD, PPB
Acetone	10-139	700
2-Butanone	14-24	350
Methylene Chloride	5-16	5
Cadmium	9	10
Chromium	12-37	50
Lead	5-250	15
Zinc	35-2,330	5,000

As the table indicates, only methylene chloride and lead were detected at levels higher than their thresholds in the groundwater samples analyzed. Methylene chloride was detected in only 7 of the 52 samples analyzed as shown in the attached summary of analytical reports. In addition, the concentrations detected are not appreciably higher than the threshold for the compound. The inconsistent occurrence and relatively low levels of methylene chloride suggest laboratory effects rather than the impact of the landfill. Lead was detected consistently above the threshold concentration in one monitoring well (Old Poach well). Water samples from other locations showed low levels of lead concentration. The Poach well is unprotected and is no longer in use. The elevated lead content in water samples from the well most likely represents well casing deterioration.

C. ARAR Review

The clean-up criteria established in the ROD for the site are consistent with the current Federal and Tennessee drinking water standards. For compounds with no federal or state standard, health based groundwater criteria were established according to EPA guidelines.

II. SITE CONDITIONS

A. Summary of Site Inspections

Periodic site monitoring and maintenance functions are performed by the PRPs as stipulated in the ROD. These functions include landfill cap inspection and repairs as necessary, inspection of appurtenant structures, the quarry pond, and the surrounding area. In addition, groundwater monitoring is conducted regularly. Reports of the activities indicate that landfill cap integrity is intact, and the vegetation is well maintained. The perimeter chain link fence remains effective in securing the landfill, and all site structures are in good repair. The quarry pond appears to be trashed frequently with paper and other light debris due to wind and overland flow during storm events. However, the condition does not appear to pose a threat to human health or the environment. As discussed previously, groundwater sampling results do not indicate an unfavorable landfill condition.

B. Areas of Non-compliance

This review did not find that the site has violated any compliance since the RA was implemented. All ROD requirements and the conditions of the consent decree continue to be met by the PRPs.

III. SUMMARY OF REVIEW

A. Recommendations

The groundwater sampling and analysis reports evaluated in this review contained some anomalous data which were presumed to be uncharacteristic of the landfill. Extraneous DEHP and methylene chloride readings were believed to represent errors from sampling and/ or laboratory procedures. This likely conclusion is recommended to be verified by running field and equipment blanks as part of the next sampling event. Elevated concentration of lead in the old Poach well was concluded to be a function of deteriorated casing. Although the well is reportedly no longer in use, the State should caution the Poach family and reiterate the deed restriction on record. Regular site inspection/maintenance and annual groundwater monitoring should continue under State supervision. Reports should continue to be sent to EPA for review and comments.

B. Statement on Protectiveness

The RA implemented at this site was aimed primarily at stabilizing the landfill by an appropriate containment method. Excessive volume of landfill content and low level contaminant concentrations precluded removal of sub- surface waste or special groundwater treatment. The RA construction was performed as designed and approved by EPA with State concurrence. Site inspection and maintenance reports indicate that the remedy is functional and effective. Monitoring results show contaminant concentrations which are within acceptable levels. Therefore, it is believed that the landfill is stable. The remedy selected for the site remains protective of public health and the environment.

C. Next Review

The next five-year review for the site is due in year 2002.

**Summary of Analytical Data for 1994
at the
Lewisburg Dump Site**

INORGANIC COMPOUNDS										
Sample Locations	Aluminum mg/l	Arsenic mg/l	Barium mg/l	Cadmium mg/l	Chromium mg/l	Copper mg/l	Lead mg/l	Mercury mg/l	Selenium mg/l	Silver mg/l
1st Quarter 1994										
Burks Well	<.100	<.100	.044	<.005	<.010	<.010	<.075	<.001	<.100	<.010
DRW-6	.316	<.100	.040	<.005	<.010	<.010	<.075	<.001	<.100	<.010
DRW-7	.311	<.100	.025	<.005	<.010	<.010	<.075	<.001	<.100	<.010
Dist. Spring	.234	<.100	<.020	<.005	<.010	<.010	<.075	<.001	<.100	<.010
2nd Quarter 1994										
Poarch Well	.646	<.100	.029	<.005	<.010	.024	<.075	<.001	<.100	<.010
DRW-6	1.09	<.100	.045	<.005	<.010	<.010	<.075	<.001	<.100	<.010
DRW-7	.331	<.100	.058	<.005	<.010	<.010	<.075	<.001	<.100	<.010
Dist. Spring	.155	<.100	<.020	<.005	<.010	<.010	<.075	<.001	<.100	<.010
3rd Quarter 1994										
Poarch Well	1.200	<.100	.044	<.005	<.010	.164	.222	<.001	<.100	<.010
DRW-6	.717	<.100	.071	<.005	<.010	.019	<.075	<.001	<.100	<.010
DRW-7	3.030	<.100	.054	<.005	<.010	.045	<.075	<.001	<.100	<.010
Hendricks Well	.494	<.100	.036	<.005	<.010	.014	<.075	<.001	<.100	<.010
4th Quarter 1994										
Poarch Well	1.330	<.100	.061	<.005	<.010	.095	.250	<.001	<.100	<.010
DRW-6	2.91	<.100	.102	<.005	<.010	.027	<.075	<.001	<.100	<.010
DRW-7	<.200	<.100	.108	<.005	<.010	<.010	<.075	<.001	<.100	<.010
Hendricks Well	.320	<.100	.050	<.005	<.010	.013	<.075	<.001	<.100	<.010
Dist. Spring	.131	<.100	.029	<.005	<.010	<.010	<.075	<.001	<.100	<.010
1st Quarter 1995										
Poarch Well	>.562	<.100	.033	<.005	.019	.038	.039	<.001	<.100	<.010
DRW-6	2.10	<.100	.109	<.005	<.010	.018	<.075	<.001	<.100	<.010
DRW-7	1.78	<.100	.117	<.005	.012	.019	<.075	<.001	<.100	<.010
Hendricks Well	<.100	<.100	.098	<.005	<.010	.028	.009	<.001	<.100	<.010
Dist. Spring	6.85	<.100	.085	<.005	<.010	.011	<.075	<.001	<.100	<.010

**Summary of Analytical Data for 1994
at the
Lewisburg Dump Site**

ORGANIC COMPOUNDS						
Sample Locations	Acetone mg/l	Bis (2-Ethylhexyl) Phthalate mg/l	Carbon Disulfide mg/l	4-Methyl-2-Pentanone mg/l	Methylenechloride mg/l	2-Butanone mg/l
1st Quarter 1994						
Burks Well	<.005	<.011	<.005		<.005	
DRW-6	<.005	<.010	<.005		<.005	
DRW-7	<.005	<.011	<.005		<.005	
Dist. Spring	<.005	<.010	<.005		<.005	
2nd Quarter 1994						
Poarch Well	<.005	<.010	<.005		<.005	
DRW-6	<.005	<.012	<.005		<.005	
DRW-7	<.005	<.012	<.005		<.005	
Dist. Spring	<.005	<.010	<.005		<.005	
3rd Quarter 1994						
Poarch Well	<.010	.040	<.005		<.005	
DRW-6	<.010	<.010	<.005		<.005	
DRW-7	<.010	<.011	<.005		<.005	
Hendricks Well	<.010	.047	<.005		<.005	
4th Quarter 1994						
Poarch Well	.010	<.010	<.005		<.005	
DRW-6	<.010	<.010	<.005		<.005	
DRW-7	.033	<.010	<.005		<.005	
Hendricks Well	.015	.025	<.005		<.005	
Dist. Spring	.011	<.010	<.005		<.005	
1st Quarter 1995						
Poarch Well	<.010	.006	<.005		<.005	
DRW-6	<.010	0.01	<.005		<.005	
DRW-7	<.010	.015	<.005		<.005	
Hendricks Well	<.010	.095	<.005		<.005	
Dist. Spring	.012	<.004	<.005		<.005	

SUMMARY OF ANALYTICAL DATA FOR 1995-1996
LEWISBURG DUMP-SUPERFUND

INORGANIC COMPOUNDS										
Sample Locations	Aluminum mg/1	Arsenic mg/1	Barium mg/1	Cadmium mg/1	Chromium mg/1	Copper mg/1	Lead mg/1	Mercury mg/1	Selenium mg/1	Silver mg/1
JUNE 1995										
Poarch Well	.943	<.100	<.020	<.005	<.010	.106	<.100	<.001	<.106	<.010
DRW-6	1.68	<.100	<.020	<.005	<.010	<.010	<.003	<.001	<.100	<.010
DRW-7	2.87	<.100	<.020	<.005	.022	<.010	.016*	<.001	<.100	<.010
Hendrick's Well	<.100	<.100	<.020	<.005	<.010	<.010	<.003	<.001	<.100	<.010
Distillery Springs	<.100	<.100	<.020	<.005	<.010	<.010	<.003	<.001	<.100	<.010
SEPTEMBER 1995										
Poarch Well	.287	<.100	.04	<.005	<.010	0.046	0.081	<.001	<.100	<.010
DRW-6	1.87	<.100	.041	<.005	<.010	<.010	<.003	<.001	<.100	<.010
DRW-7	9.19	<.100	.110	<.005	<.029	.031	.10*	<.001	<.100	<.010
Hendrick's Well	.216	<.100	.066	<.005	<.010	<.010	.005	<.001	<.100	<.010
Distillery Springs	1.56	<.100	.033	<.005	<.010	<.010	<.003	<.001	<.100	<.010
DECEMBER 1995										
Poarch Well	<.100	<.100	.040	<.005	<.010	.033	.025*	<.001	<.100	<.010
DRW-6	.154	<.100	.140	<.005	<.010	<.010	<.001	<.001	<.100	<.010
DRW-7	11.2	<.100	.127	<.005	.037	.024	.016*	<.001	<.100	<.010
Hendrick's Well	.132	<.100	.177	<.005	<.010	.013	.008	<.001	<.100	<.010
Distillery Springs	<.100	<.100	.037	<.005	<.010	<.010	<.001	<.001	<.100	<.010
MARCH 1996										
Poarch Well	.221	<.075	.033	<.005	<.010	.036	.033*	<.001	<.050	<.010
DRW-6	.835	<.075	.163	<.005	.012	<.010	<.001	<.001	<.050	<.010
DRW-7	.763	<.075	.036	<.005	<.010	<.010	<.001	<.001	<.050	<.010
Hendrick's Well	<.200	<.075	.060	<.005	<.010	<.010	<.001	<.001	<.050	<.010
Distillery Springs	1.50	<.075	.031	<.005	<.010	<.010	<.001	<.001	<.050	<.010

SUMMARY OF ANALYTICAL DATA FOR 1995-1996

AT THE

LEWISBURG DUMP SUPERFUND SITE

ORGANIC COMPOUNDS

SAMPLE LOCATIONS	ACETONE MG/L	BIS(2 ETHHHYL- HEXYL) PHATHALATE MG/L	CARBON DISULFIDE MG/L	4-METHYL-2- PENTANONE MG/L	METHYLENE- CHLORIDE MG/L	2-BUTANONE MG/L
JUNE 1995						
Poarch Well	.015	.008*	<.005		<.005	
DRW-6	<.010	<.004	<.005		<.005	
DRW-7	<.010	<.004	<.005		<.005	
Hendrick's Well	.019	<.004	<.005		<.005	
Distillery Springs	<.010	<.004	<.005		<.005	
SEPTEMBER 1995						
Poarch Well	.016	.008*	<.005		<.008*	
DRW-6	<.010	<.004	<.005		<.007*	
DRW-7	.020	.008*	<.005		<.009*	
Hendrick's Well	.017	<.004	<.005		<.005	
Distillery Springs	<.010	<.004	<.005		<.005	
DECEMBER 1995						
Poarch Well	.139	<.004	<.005		<.005	
DRW-6	.015	<.004	<.005		<.005	
DRW-7	.046	.176*	<.005		<.005	
Hendrick's Well	.044	<.004	<.005		<.005	
Distillery Springs	.020	<.004	<.005		<.005	
MARCH 1996						
Poarch Well	<.010	<.004	<.005		<.005	
DRW-6	<.010	<.004	<.005		<.005	
DRW-7	<.050	<.004	<.005		.016*	
Hendrick's Well	<.010	<.004	<.005		<.005	
Distillery Springs	<.010	<.004	<.005		<.005	

September 1996 Results						
Compounds	Threshold mg/l	DRW-7	DRW-6	Poarch	Hendrick	Distillery
Acetone	0.7	0.017	0.053	0.044	ND	ND
2-butanone	0.35	0.014	0.024	ND	ND	ND
Bis(2-ethylhexyl)phthalate	0.004*	0.009	0.025	ND	ND	ND
Carbon disulfide	0.7	ND	ND	ND	ND	ND
Methylene chloride	0.6	0.005	0.006	ND	ND	0.005
4-methyl-2-pentanone	0.35	ND	ND	ND	ND	ND
Aluminum	0.05*	4.54	2.02	0.905	0.334	ND
Barium	1	0.066	0.048	0.05	0.04	0.024
Cadmium	0.01	ND	ND	ND	0.009	ND
Chromium	0.05	0.014	ND	ND	ND	ND
Copper	1	0.022	0.022	0.076	0.02	ND
Iron	0.03*	5.51	3.44	3.92	2.6	0.168
Lead	0.015*	0.011	ND	0.108	0.019	ND
Manganese	0.05*	0.111	0.07	0.673	0.068	0.016
Mercury	0.002	ND	ND	ND	ND	ND
Nickel	0.001	ND	ND	ND	ND	ND
Silver	0.05	ND	ND	ND	ND	ND
Zinc	5	0.145	0.07	0.763	2.33	ND

ND=non-detectable

March 1997 Results						
Compounds	Threshold mg/l	DRW-7	DRW-6	Poarch	Hendrick	Distillery
Acetone	0.7	ND	ND	ND	ND	ND
2-butanone	0.35	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	0.004	ND	ND	0.014	ND	0.012
Carbon disulfide	0.7	ND	ND	ND	ND	ND
Methylene chloride	0.6	ND	ND	ND	ND	ND
4-methyl-2-pentanone	0.35	ND	ND	ND	ND	ND
Aluminum	0.05	6.12	2.49	4.3	6.51	4.74
Barium	1	0.072	0.047	0.054	0.068	0.061
Cadmium	0.01	ND	ND	ND	ND	ND
Chromium	0.05	0.031	0.019	0.026	0.031	0.025
Copper	1	ND	ND	ND	ND	ND
Iron	0.03	5.84	1.85	4.25	5.37	4.43
Lead	0.015	0.008	ND	0.008	0.009	0.01
Manganese	0.05	0.107	0.038	0.077	0.096	0.09
Mercury	0.002	ND	ND	ND	0.0005	0.0003
Nickel	0.001	ND	ND	ND	ND	ND
Silver	0.05	ND	ND	ND	ND	ND
Zinc	5	0.067	0.035	0.049	0.062	0.056

ND=Non-detectable

ROUTING SLIP

Name	Date
Femi Akindele	for Akindele 9/25/97
Harold Taylor	for Brown for H Taylor 9/25/97
Robert Jourdan	for 9/25/97
Jewell Harper	
Richard D. Green	JJ 9/26/97

To: ADMINISTRATIVE ASSISTANTS

PLEASE CALL FEMI AKINDELE AT 2-8809

TO PICK UP PACKAGE AFTER FINAL SIGNATURE

THANKS.